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RSV can increase the risk of asthma, UT Southwestern researchers find

DALLAS – June 28, 2004 – A viral respiratory infection common in children increases the risk of developing asthma, researchers at UT Southwestern Medical Center at Dallas have reported.

The study, published in *The Journal of Infectious Diseases*, is the first to show a link between respiratory syncytial virus, or RSV, infection and asthma in mice. A related study, also in mice, suggests that a medication neutralizing the virus could decrease children's chances of developing asthma.

RSV is the leading cause of viral respiratory infections in infants and children worldwide.

“We have suspected a connection between asthma and RSV for a long time, but there has been no scientific evidence confirming this theory until now,” said [Dr. Octavio Ramilo](#), associate professor of pediatrics in the Cancer Immunobiology Center and the study's senior author. “RSV is a very common virus and one of the most frequent respiratory illnesses. Most babies will get over the infection, but some develop severe wheezing and other permanent asthma-like symptoms.”

Half of all babies get an RSV infection within the first year of their life and by age 3 practically all have had at least one RSV infection, said Dr. Ramilo. About 10 percent of high-risk and young infants with RSV infections will develop severe bronchitis and require hospitalization.

Earlier studies have found that treatment with an anti-RSV neutralizing antibody significantly reduced hospitalization rates in high-risk infants. UT Southwestern researchers tested the medication on mice and demonstrated that the anti-RSV antibody not only prevented the acute severe form of bronchitis but

also prevented the long-term complications of the disease. The findings were published in the journal, *Antimicrobial Agents and Chemotherapy*.

“These findings have enormous implications,” said [Dr. Hasan Jafri](#), assistant professor of pediatrics who is lead author on the *Infectious Diseases* study and co-senior author on the *Antimicrobial* study along with Dr. Ramilo. “You could potentially prevent RSV-related asthma. That by itself would affect a vast number of patients and affect their quality of life as children and later as adults.”

Earlier studies have shown that the drug Palivizumab resulted in a 55 percent reduction in hospitalizations for RSV when given monthly during the RSV season to high-risk babies, including those born prematurely or with congenital heart disease or chronic lung disease.

“An antibody that is commercially available could possibly reduce the long-term complications of serious RSV infections in high-risk babies,” Dr. Ramilo said. “These findings not only provide another line of treatment for sick children but also have implications for the potential benefits of a future vaccine against RSV.”

To establish the link between RSV and asthma, researchers infected healthy mice with RSV and monitored the animals for 154 days. The infected mice developed pneumonia as well as chronic lung problems. The RSV-infected group developed airway obstruction, mucus overproduction and airway hyper-responsiveness, or asthma, while a control group did not.

To determine whether the antibody in the drug was effective against RSV, UT Southwestern researchers infected healthy mice with RSV and monitored them for up to 70 days. Palivizumab or an isotype-matched control antibody was given once either 24 hours before infection, one hour after infection or 48 hours after infection. All mice treated with the neutralizing antibody showed improvement regardless of when the medicine was given.

UT Southwestern researchers’ next step will be to study whether treatments against RSV can reduce RSV-associated asthma in children. Researchers believe these findings could also lead to the development of new anti-RSV medications.

Drs. Ramilo and Jafri co-direct the RSV-research program at UT Southwestern and [Children's Medical Center Dallas](#).

Other UT Southwestern researchers, who are also on staff at Children's, involved in the studies include: Dr. Susana Chávez-Bueno and Dr. Asunción Mejías, co-lead authors of both studies and postdoctoral trainees in pediatrics; Dr. Ana Rios, postdoctoral trainee in pediatrics; Dr. Ana Gómez, assistant professor of pathology; Shahryar Nassi, a medical student; Dr. Payal Kapur, a postdoctoral trainee in pathology; Dr. R. Doug Hardy, assistant professor of internal medicine and pediatrics; and Dr. Beverly Rogers, professor of pathology. Jeanine Hatfield, an emergency room nurse at Children's, was also involved.

Grants from the American Lung Association, Children's Medical Center Dallas Research Foundation, Pediatric Infectious Diseases Society and GlaxoSmithKline Pharmaceuticals supported the *Infectious Diseases* study. MedImmune Inc., the American Lung Association, and an Ausonia & Arbora grant from the Asociación Española de Pediatría supported the *Antimicrobial* study.

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